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11. The influence of parental smartphone use, eye contact and 'bystander ignorance' on child development

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INTRODUCTION

Digital technologies and media have changed the daily lives of families around the world by creating new interactional contexts and relational patterns (e.g., Ólafsson et al., 2013; Wartella et al., 2013). The familial use of digital media has quickly renewed the structure, function and mentality of family interaction. Smartphones are the flagships of new digital media and the number of smartphone owners (Smith, 2015), as well as the frequency of smartphone use (Rosen, 2012; ebrand, 2015; Turkle, 2015), has been increasing rapidly. The shift from the 'computer age' to the 'smartphone age' is a reality all over the world (Carson and Lundvall, 2016).

A common response to criticism of new technology states that technologies have always been met with suspicion and horror stories that in hindsight have turned out to be exaggerated. The hampering effects of smartphone use on simultaneous face-to-face interaction have been dubbed the phenomenon of the 'sticky media device' and concern has been raised about parental smartphone use in particular (see Chapter 9 in this book). But why should using a smartphone differ in this regard from reading a book or making dinner? Can parental attention not be 'stuck' on various things and so lead to absent or confusing responses to a child?

In this chapter, we illustrate the central mechanisms of smartphone use that, from the point of view of small children, set the parental use of the smartphone significantly apart from many other activities in the visible home environment. There is a point to be made that, for example, television and magazines do not create a similar interactional structure with

their user based on turn-by-turn actions (cf. Mantere and Raudaskoski, Chapter 9 in this book), but we also argue that there are other as yet uninspected elements in the equation that are crucial for understanding what the spread of smartphones into the everyday lives of families can mean for a developing child. Compared to the handling of other objects in the home environment, the use of smartphones is exceptional in two major ways: (1) it catches the gaze and thus draws the caregiver away from the participation framework and (2) it conveys exceptionally few signs of the activity that the caregiver is engaged in.

We start off the chapter by considering the meaning of gaze in early interaction, focusing on how it paves the way for attachment and social skills. After that, we discuss the affordances of environmental artefacts and their part in the process of socialization. Following this, we introduce the new concept of 'bystander ignorance', which illustrates the role of smartphone use from the point of view of another person in the same physical space with the smartphone user. We approach bystander ignorance by considering the situational aspects of parental smartphone use relevant to a small child. To conclude, we discuss the possible influences of bystander ignorance on child development and highlight the need for further studies.

THE ROLE OF EYE CONTACT IN EARLY ATTACHMENT

> Making eye contact is the most powerful mode of establishing a communicative link between humans. During their first year of life, infants learn rapidly that the looking behavior of others conveys significant information. Human infants prefer to look at faces that engage them in mutual gaze and that, from an early age, healthy babies show enhanced neural processing of direct gaze. (Farroni et al., 2002, p. 9602)

The quality of the parent–child relationship has endured in the history of the human sciences as the paramount factor in child development (e.g., Bowlby, 1969; Valsiner and Connolly, 2005). Studies in the field highlight that making eye contact is the most powerful mode of establishing a communicative link between humans. For people with well-functioning eyesight, gaze is one of the major aspects of forming a system of attachment between a caregiver and child. Moreover, early sensitivity to a mutual gaze is arguably the basic foundation for the later development of social skills.

In the early weeks and months of a baby's life, eye contact with others 'maintains life' by tempting the child into curiosity and activity. It is

essential for the development of humans to understand that faces can reflect internal states of social partners, at the hub being the importance of processing information about eyes and eye-gaze direction (e.g., Robson, 1967; Tomasello, 1999a; Farroni et al., 2002; Ayers, 2003). At all ages, a gaze shared between two persons is a way of showing a willingness to begin a mutual encounter (Goffman, 1963, pp. 91–5; Argyle and Dean, 1965, p. 291; Kendon, 1967). Eye contact is also the beginning of relating to objects, which forms a model for how the child becomes familiar with the world. Thus, among human beings, gaze seems to function to provide information, regulate interaction, express intimacy, exercise social control, and facilitate task goals (Kleinke, 1986).

The links between eye contact and emotional responsiveness have been reported in a number of studies (e.g., Ainswort et al., 1971). The sensitive responses of parents to a child's signals can strengthen the child's positive emotional states and modulate negative ones, forming a specific style of attachment (Bowlby, 1969; Ainsworth, 1979). Infants needing care in order to survive seek proximity to the parents or other caregivers and try to establish communication with them. Repeated experiences become encoded as expectations and then as mental models of attachment, which give children a sense of security called the secure base (Siegel, 1999). Thus, with small children, the direction of the gaze is linked to whether the caregivers are emotionally available. Emotional availability has been called the 'connective tissue of healthy socioemotional development' (Easterbrooks and Biringen, 2000, p. 123). According to earlier studies, emotional availability, coherent behaviour and adequate stimulation can be associated with the development of an emotionally and socially competent child, whereas the experience of emotional unavailability, incoherent behaviour and inconsistent reactions in the early years of life may lead to ambivalent emotional reactions in later social relations. Parental under-attuning can be connected to the fragmentation of children's attention, uncertain mutuality, ambivalent emotionality, and insecure relationships (Kreppner, 2005).

Koulomzin et al. (2002) found that the attachment styles of one-year-old infants could already be predicted by the behaviour the infants showed while playing with their mothers at the age of four months. By coding specifically the gaze, head orientation, facial expression and self-touching/mouthing behaviour, they concluded that compared to children who ended up having insecure/avoidant attachment style, the future-secure infants spent more time focusing their visual attention on the face of the mother than those with a future-avoidant attachment style.

LEARNING SOCIAL SKILLS

The long-standing social psychological concepts of the 'looking-glass self' (Cooley, 1902) and the 'generalized other' (Mead, 1934) state that the development of the self is based on children's understanding of how others perceive them, and a person's self grows out of interpersonal interactions and the perceptions of others. A child's perceptions of how parents or other caregivers acknowledge his or her initiatives determine the child's view of themselves.

Studies show that long before children are able to speak, they encounter an interactionally organized social world (e.g., Goffman, 1964; Tomasello, 1999a, p. 71; Levison, 2006, p. 40), even just after their birth (e.g., Meltzoff and Moore, 1977; Stern, 1985). Early-appearing forms of communicative actions are carried out through visible bodily behaviour, including, for instance, pointing gestures and gaze (Liszkowski, 2006; Lerner et al., 2011). It has been argued that even if human children had an evolutionary based biological readiness for interaction, the actual process of developing communicative skills conforms to the requirements of the observable order of interaction and participation in it (Levinson, 2006, p. 54; Lerner et al., 2011, p. 57).

Interaction is characterized by an expectation of the next relevant action and its close timing (Levinson 2006, p. 46). Significant for understanding the issues that shape the child's emerging social skills is the orientation that children – and those with whom they interact – have on the production and recognition of mutual understandings. This view of development brings into focus the subtle changes in association produced by the child, which are often shown to be highly sensitive to the communicative sequence in which they occur (Gardner and Forrester, 2010). Already young infants comprehend normative expectations of face-to-face interaction and find even short temporary violations of these expectations upsetting (Mesman et al., 2009). However simple an action may appear, it is a sequentially organized, locally realized practical activity with an emergent structure that provides the resources for the recognition and production of actions relevant to it. Thus, what is glossed as 'socialization' takes place as conduct situated in these constituents of the toddler's everyday life (Lerner et al., 2011, p. 57; Keel, 2016)

The learning of social skills is complex, and the meaningful layering of gaze, gesture, talk and other resources are very much part of the communicative framework at any age. Local sequential issues are always inextricably linked to wider issues of the child's emerging membership within society (Gardner and Forrester, 2010). We stress here Mantere and Raudaskoski's notion of how the use of smartphone hampers the smooth sequential progression of interaction and the timing of relevant next actions

(see Chapter 9 in this book). Thus, there is a point to be made that the use of the smartphone creates a competing participation framework (Goffman, 1981) that has an effect on simultaneous face-to-face interaction.

As said earlier, gaze orientation gives the infant fundamental information about the caregiver's emotions and involvement, which, accordingly, influences the baby's feelings of safety and security. The opportunity to recognize another's intention to approach or avoid is one of the principal mediating factors governing social interaction. Research has shown that approach-oriented emotions like joy, love and affection are usually expressed with a direct gaze, whereas avoidance-oriented emotions such as sorrow, bewilderment and disgust are displayed with an averted gaze. Because gaze direction conveys important information about a person's thoughts and emotions and specific gaze behaviours tend to co-occur with particular facial displays of emotion, these gaze behaviours might also influence how such facial displays are perceived by others (Adams and Kleck, 2005, pp. 3–4).

Thus, a caregiver looking at the screen of the smartphone may produce a facial expression of joy, but it is not synchronized with eye contact, and this produces ambivalent information about the caregiver's affective state in relation to the bystanding baby. In addition, because the attention fluctuates between the face-to-face situation and the smartphone, it is unclear to others which level of awareness about the participation framework should be expected of them. Babies do not yet comprehend the frame of action produced by parental smartphone use, and cannot interpret the multiple actions.

The question we want to raise is that if theories of human development unquestionably argue for the importance of eye contact in the early development of children, what are the possible effects of frequent smartphone use by parents? What happens if, due to smartphone use, a parent or another significant caregiver is misattuned, withdrawn, rejecting, and does not produce a response to the excited, crawling, playing child who is unable to engage the caregiver's eyes? Following the interaction order and the sequential progression of face-to-face activity would be difficult for anyone – let alone young children – when one of the members is simultaneously oriented towards an activity with a smartphone.

THE AFFORDANCES OF ARTEFACTS AND IMITATIVE LEARNING

Human babies start imitating the facial expressions of others almost immediately after birth. Initially, the brain of a newborn is not capable of

organizing sensory-motor information of a degree much higher than the movement of the eyes, but other forms of imitative behaviour manifest as the brain matures: facial movements and increasingly sophisticated movements of the hands are followed by the rest of the body all the way up to complicated modulations in posture, conveying exact social information with the fine-tuning of a fraction of a second (e.g., Vygotski, 1966; Stern, 1971; Meltzoff, 1996; Valsiner and Van der Veer, 2000).

Babies who are learning to interpret their environment come across different kinds of objects and artefacts: they grasp, suck and manipulate them and thus become aware of their affordances (Gibson, 1979). This is called the direct learning of affordances. However, even physical objects are usually encountered in a social framework, and thus most human affordances are in fact 'social' (e.g., Reed, 1996, pp. 124–5; Ingold, 2000, pp. 21–2). Children are selectively exposed to objects by other individuals, and then begin to use them as reference points in deciding how to interact with the objects in question (Tomasello, 1999b, p. 165).

The ability to process gaze information is pivotal when drawing conclusions of behavioural intentions from the non-verbal behaviour of others. Monitoring the caregiver's direction of gaze tells the child where the caregiver's focus of attention is. Already very early on in their lives, infants begin to tune in to and attempt to reproduce both the adults' goal and their behavioural means: the artefacts come to embody what Tomasello calls 'intentional affordances' (1999a, p. 84; 1999b, p. 166). Children learn about the artefacts' conventional or cultural affordances. As human children observe other people using cultural tools and artefacts, in Tomasello's words (1999a, p. 81; 1999b) they often engage in the process of 'imitative learning' in which they attempt to place themselves in the 'intentional space' of the other, discerning the other's goal – that is, what they are using the artefact 'for'. In this process, children come to know not only the sensory-motor affordances, but also the intentional affordances – in other words, the intentional means that other people have in the world through artefacts (Tomasello, 1999a, pp. 84–5).

The visible bodies of participants provide systematic, changing displays about the orientation and goal-relevant actions. In addition to the participants' placement, the ability to perceive something meaningful is always tied to access to relevant material surroundings. Rather than standing alone as a self-contained domain, visual phenomena are constituted and made meaningful through the way in which they are embedded within a larger set of practices (Goodwin and Goodwin, 1996; Goodwin, 2001). By engaging in imitative learning, the child joins the other person in affirming what the object is used for: hammers are for hammering and pencils are for writing (Tomasello, 1999a, p. 84). Usually in

these kinds of situations of imitative learning, there is a plethora of visual, auditory or even other types of information instantly available for the child to maintain the sense of what is going on in the social setting. Children's embodied engagement with an environment of intentional affordances is shaped into meaningful actions through interaction with an experienced practitioner – a caregiver – through the structure of mutual accessibility created in the joint participation framework (cf. Goffman, 1981; Fogel, 1993, pp. 89–98; Goodwin, 2007, p. 59). This kind of joint attention, in which multiple actors are attending the same object in the environment, is a key aspect in the organization of human intersubjectivity (Tomasello, 1999a, p. 62).

Traceable courses of actions also play a part in the process of learning the emotional states of others, that is, the affective relationships between actors and intentional affordances (cf. Ingold, 2000, p. 23). The mental states of people physically near to us are not their individual business alone. They are highly relevant to all sharing the space with them. One has to be aware of all the semiotic resources (Goodwin, 2000) to make sense of the relationship between mental states and objects of actions in order to determine whether some action, or any action, on our part is befitting or outright vexatious.

We argue that unlike most artefacts in the human environment, smartphones serve poorly as intentional affordances for small children. The smartphone – and its use – does not include such clues that enable the 'intentional stance' (Dennett, 1987) of the user to be easily traced. Because we do not readily see what activity a user is performing with a smartphone, we can neither easily interpret the phase of their action: they serve poorly as a basis for the framework of joint attention. Next, we will theoretically conceptualize this phenomenon by introducing 'bystander ignorance'.

BYSTANDER IGNORANCE

A caregiver using a smartphone draws back from the participation framework, which in practice means that his or her gaze and attention averts from the child and the surroundings, and fastens onto the screen of the device. The interactional nature of most applications used by the smartphone leads to a situation where it is not easy to take one's eyes from the screen. At the same time, the traceable hints of the sequences and goals of smartphone activity, which can be anything from playing a game to closing a deal with a customer, become unclear. This notion leads to the central issue of our chapter: caregivers starting to use a smartphone to a large extent stop giving hints of the goals of their actions to the child

watching them, and the child cannot infer from the posture and gestures of the caregiver or the shape and state of the smartphone which action the caregiver is currently performing. This aspect of smartphone use is by and large missing in other forms of solitary activity that a parent might become absorbed in. Having recognized this special aspect, we have named it 'bystander ignorance' and define it thus: the exceptional level and quality of unawareness that a person interested in pursuing face-to-face interaction with a smartphone user has about the aspects of the activity that the user is currently engaged in.

It is surely also a case with other object-aided actions that the action could be interpreted by the bystander to fall into more than one category. For example, a parent going through papers on a desk might be working, paying bills or just tidying up. However, of all the objects within the modern household, it is exactly the smartphone that is the medium for the greatest number and variation of possible actions and it is simultaneously the object that offers the least number of cues to the bystander about the particular action taking place. The screen of the smartphone is smaller than that of a TV, laptop or even tablet computer, and unlike a TV or laptop, it is usually directly facing the eyes of the user at a close enough distance that the screen is unlikely to be seen by anyone else.

In many activities, such as making dinner or watching television, there are immediately available hints to the bystander about the phase of the activity. Children can trace the sequential progression of the activity and in time get acquainted with the appropriate norms of behaviour (see also Chapters 9 and 10 of this book). In the case of smartphone use, however, the categories of action are so supremely hidden to the bystander that in comparison to the use of other domestic objects, the opportunities for social learning and comprehensive socialization to different areas and sectors of life circumstances can be hard to discern.

Of course, seeing a parent using a smartphone will give information about smartphone use to the child, and surely there are already many norms and schemas that today's children learn about smartphone use. One norm that accompanies poor intentional affordances of smartphone use is the private nature of its use. When a child is old enough to understand the concept of privacy, this element also begins to contribute to bystander ignorance. Viewing another person's smartphone screen should be avoided (unless actively shared by the user). This being commonly assumed, the unprompted viewing of someone else's smartphone screen can be perceived as a breach of privacy. It is about accepting and normalizing the 'absent presence' that Kenneth J. Gergen (2002) talked about already in the early 2000s when mobile phones had become common. One is physically present, but is absorbed into a virtual world by mediating technology.

Gergen predicted that with the inevitable tendency towards ever more applications and functions in mobile phones, absent presence would proliferate in the future. He was right.

DISCUSSION

As discussed, in the early days of infancy, eye contact is of utmost importance in creating a secure attachment between the child and caregiver. However, young adults in the 2010s – and thus parents-to-be – are used to looking at their smartphones at least every 15 minutes and putting online textual interaction before face-to-face conversation (Turkle, 2015). We argue that within this world of 'conversational silence', where eyes are glued to the mobile screen, the production of relevant eye contact with children and timely, correct interactional turns is at risk.

Exploring the video data collected during the project 'Media, Family Interaction and Children's Well-Being' (665 hours in total; see Appendix 1) clearly shows that there is a process of increasingly complex imitation going on in the day-to-day lives of these families with children. Children can be seen imitating not only their parents, who may be preparing food or watering the plants, but also television characters, for example. Depending on their age, the children's performances varied from the imitation of bodily movements to the more sophisticated imaginative play of a professional or some other social identity. The imitative ability encompasses ever-greater complexity through the synergetic development of the brain in union with the practice-driven development of mental skill. What jumps out when observing modern family life is that among all the activities taken up by the primary objects of imitation (by the primary agents of socialization, i.e., the caregivers), there is one that stands alone in being shrouded in mystery when it comes to the child being able to see and follow the actual action of the caregiver. Whereas an undertaking of watering the plants is something that can be mimicked even by a two-year-old, the use of a personal smartphone by various means towards various ends is an activity that for a young bystander does not in fact open up as a process of doing something. 'What is mother doing with her smartphone?' asked one of the authors of their nephew. 'Talking', the child replied. 'And when she is not talking, what is she doing?' the researcher continued. 'I don't know', said the child. With the proliferation of smartphones into the everyday lives of families, children are in ever-increasing numbers observing their parents perform actions that do not look like actions, towards ends that they have no information about. The whole process of imitating the parents' smartphone use consists of taking the device in one's hand and looking at

it. Here is the key issue: what is the practice of the skill of imitation leading towards in the ability to take roles in this imitative process? What are the quantity and quality of the actions to be imitated in the case of smartphone use? To the child undergoing the imitation of what he or she has seen, there is no recognizable sequence, no stages of planning, preparation, execution and completion, no evaluation and revision – there is indeed uniquely little to copy and hence uniquely few actions to be taken as a role expectation. 'Bystander ignorance' caused by the invisible procedures of another person's smartphone use can thus hamper the progression of social skills, and consequently may affect the development of children. In stating this hypothesis, we acknowledge the need for further empirical research, both in naturally occurring and experimental research settings.

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